Nanostructured Materials Produced by Severe Plastic Deformation

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Various methods for severe plastic deformation are classified according to the strain paths involved:

- Continuous strain without change of strain path,
- Accumulated strain without change of strain path,
- Accumulated strain with reversal of strain path,
- Accumulated strain with variable strain path

For comparison of different experiments the concepts of “equivalent strain” and “strain efficiency” are discussed.
Severe plastic deformation of metals leads to an extremely fine microstructure. This is produced by “fragmentation” of the original crystal structure. The mechanisms for this fragmentation are discussed.
Some ideas will be presented on the relation between correlation functions for misorientation between grains and deformation texture.